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INFLUENCE OF SOWING METHODS ON YIELD ELEMENTS OF SUNFLOWER VARIETIES

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ABSTRACT

Sunflower oil ranks first among selected vegetable oils in terms of quality. Therefore, in many countries of the world, an increase in the level of economic efficiency is observed depending on the area of sowing and the amount of yield obtained from it. This scientific article develops the main elements of the technology of growing oil sunflower as a repeated crop to obtain high yields from early-maturing varieties. Planting sunflower as a repeated crop after wheat and using the correct planting schemes has led to an increase in yield. The number of seeds in one basket and their weight depend on the planting scheme, and when the seed planting scheme is 70x30-1 as a repeated crop, it has been proven that the yield elements - basket, number of seeds, weight and yield increase.

KEYWORDS

Seed, seedling, repeat, sunflower, crop, oil, predecessor, economic characters, basket, variety, yield, early-ripening, productivity, scheme.

INTRODUCTION

Sunflower is a seedless plant, the seed kernel contains 50-65% oil, 22-24% protein, vitamins (A, D, E, K) and phosphates. Sunflower oil is absorbed by the body up to 86-91%, and 100 g of oil produces 929 kcal of energy.

Sunflower oil is used in the production of margarine, mayonnaise, fish and vegetable preserves, confectionery products, varnish, soap. 25-50 kg/ha of honey is obtained from sunflower.



The level of study of the problem. In experiments, sunflowers were planted with a row spacing of 70-90 cm and a row spacing of 25-30 cm, which gave good results. When sowing using a pneumatic seeder, 6-8 kg of seeds were used per hectare. After germination, the seeds were sown with the condition of leaving 3.5-4 seedlings per 1 m². It was indicated that the density of sunflower seedlings is 35-40 thousand seeds [3], [4].

Sunflower varieties were sown manually on July 8, the planting pattern was 60x18, and the seed consumption was 60-65 thousand seeds per hectare. According to the results of the experiment, the yield was 30.2 c/ha for the “Yangi Zamon” variety, 30.2 c/ha for the “Osiyo” variety, and 25.3 c/ha for the “Buzuluk” variety. The highest yield was observed in the “Yangi Zamon” variety [7].

Newly developed intensive sunflower varieties can be planted without irrigation at the following planting densities: in the southern steppe - 40 thousand / ha, in the northern steppe - 50 thousand / ha, in the forest-steppe - 55-60 thousand / ha. For hybrids, it is recommended to increase the planting density to 10-15 thousand / ha, and an average planting density of 4-6 kg of seeds per hectare is considered effective [1],[2].

METHODS

Experiments were conducted in 2016-2018 in the typical gray soil conditions of the experimental field of the Tashkent State Agrarian University's "Center for Innovative Developments and Consulting in Agriculture". The experiment involved planting 4

sunflower varieties: "Jahongir", "Rodnik", "Dilbar" and "Navruz" in 4 planting schemes: 70x20-1; 70x25-1; 70x30-1; 70x35-1. Placement of field experiments, calculations and observations were determined according to "Methods of conducting field experiments" (5), stem height of sunflower varieties (at all stages of development), number of leaves per plant, basket weight, number of seeds in a basket and their weight, weight of 1000 seeds, leaf surface (A.A. Nichiporovich, 1963), influence of feeding area.

RESULTS

According to the results of the study, the basket diameter of the Jahongir control variety was 17.1 cm in the variant with a small feeding area of 1400 cm², 18.2 cm in the variant with a feeding area of 1750 cm², 19.6 cm in the variant with a high feeding area of 2100 cm², and 20.2 cm in the variant with a large feeding area of 2450 cm².

While the diameter of the baskets of the Rodnik variety in the same feeding areas was 18.5, 19.8, 20.9, and 22.1 cm, the “Dilbar” variety was found to be larger than the “Rodnik” and “Jahongir” varieties. It was determined that the “Dilbar” variety had a small feeding area of 1400 cm², a feeding area of 1750 cm², a feeding area of 27.3 cm, a feeding area of 2100 cm², a feeding area of 29.0 cm, and a feeding area of 2450 cm², respectively. In this variety, the diameter of the baskets of the control variety “Jahongir” was 10.2 cm, 9.8 cm, 8.8 cm, and 9.3 cm larger than the variants.



It was found that Navruz variety baskets are larger in diameter compared to "Jahongir", "Rodnik" and "Dilbar" varieties studied in the experiment, and the baskets of this variety differed in diameter compared to "Dilbar" variety according to planting schemes in the following order: 1.7 cm, 4.2 cm, 3.8 cm and 3.5 cm. It was observed that the diameter of the baskets of "Navruz" variety compared to the control variety "Jahongir" was larger by 11.9 cm, 14.0 cm, 13.2 cm and 12.8 cm.

The weight of the baskets taken from the counted plants was weighed and the total weight of one basket was determined. It was found that the feeding area has a positive effect on the weight of the baskets.

In the control variety "Jahongir" in the 70x20-1 planting scheme, the average weight of one basket was 67.9 grams, after the seeds were extracted from the baskets, the weight of an empty basket was found to be 37.6 grams. In the planting scheme 70x25-1, the total weight was 72.3 g and the weight of an empty basket was 32.8 grams, in the planting scheme 70x30-1 it was 82.6 g and the weight of an empty basket was 33.6 grams, and in the planting scheme 70x35-1 it was 89.4 g and the weight of an empty basket was 38.4 grams.

It was found that the weight of the baskets increased according to the planting schemes of the "Rodnik" variety. In this case, the total weight of the basket according to the planting schemes compared to the "Jahongir" variety was 7.3, 20.6, 20.3, 16.2 grams, and the weight of the empty basket was 0.8 grams lighter

in the first variant, 9.7 grams in the second variant, 5.9 in the third variant, and 2.0 grams heavier in the fourth variant.

In the experiment, the baskets of the "Dilbar" variety were distinguished by their large size and a large number of seeds in them, as well as their weight. In this case, the total weight of the basket according to the planting schemes compared to the control "Jahongir" variety was 18.6, 40.4, 56.2, 61.5 grams, and the weight of the empty basket was 3.7, 21.5, 32.6, and 30.0 grams heavier. Compared to the "Rodnik" variety, the total weight of the basket according to the planting schemes was 11.3, 19.8, 35.9, 45.3 grams, and the weight of the empty basket was 4.5, 21.5, 26.7, and 28.0 grams heavier.

The number of seeds in one basket and their weight depended on the feeding area, and an increase in the feeding area led to an increase in the number and weight of seeds. In the first variant of the "Jahongir" control variety, in the 70x20-1 planting scheme, there were an average of 620.7 seeds per plant, the weight of which was 30.3 grams. In the second variant, in the 70x25-1 planting scheme, there were 650.3 seeds, the weight of which was 39.5 grams. In the third option, there were 746 seeds in the planting pattern 70x30-1, weighing 49.0 grams, and in the fourth option, in the planting pattern 70x35-1, there were 825.3 seeds, weighing 51.0 grams.

The number of seeds and their weight in the "Rodnik" variety is higher than the indicators of the control

variety "Jahongir", in the 70x20-1 planting scheme, the number of seeds is 67.8 more and the weight is 8.1 grams, and in the 70x25-1 planting scheme, it is 101.7 seeds and the weight is 10.9 grams, in the 70x30-1 planting scheme, it is 129.9 seeds and the weight It was observed that 14.4 grams, 138.5 more and 14.2 grams heavier in 70x35-1 planting scheme.

In the experiment, the indicators of yield elements of "Dilbar" and "Navruz" varieties were close to each

other and higher than "Jahongir" and "Rodnik" varieties. In the 70x20-1 sowing scheme of the "Dilbar" variety, one plant contained an average of 517.2 seeds, and its weight was 45.2 grams. In the second option, there were 685.4 seeds and its weight was 58.4 grams. The third variant contained 901.9 seeds weighing 72.6 grams and the fourth variant contained 1053.0 seeds weighing 82.5 grams.

Table 1

Effect of sowing scheme on yield elements of sunflower varieties (2016-2018 yy.)

	Varieties	Sowing scheme	Basket diameter, cm width	Total weight of one basket, g	Empty basket weight, cm	Productivity of one plant		Undeveloped seeds, %	1000 pcs seed weight, g
						number of seeds, piece	Seed weight, g		
1	Jahongir (st)	70x20-1	17.1	67.9	37.6	434.1	30.3	12.2	69.8
2		70x25-1	18.2	72.3	32.8	576.6	39.5	12.0	68.5
3		70x30-1	19.6	82.6	33.6	745.8	49.0	11.0	65.7
4		70x35-1	20.2	89.4	38.4	814.7	51.0	10.3	62.6
5	Rodnik	70x20-1	18.5	75.2	36.8	501.9	38.4	11.3	76.5
6		70x25-1	19.8	92.9	42.5	678.3	50.4	11.0	74.3
7		70x30-1	20.9	102.9	39.5	875.7	63.4	10.3	72.4
8		70x35-1	22.1	105.6	40.4	953.2	65.2	9.6	68.4



9	Dilbar	70x2 0-1	27.3	86.5	41.3	517.2	45.2	5.9	87.4
10		70x2 5-1	28.0	112.7	54.3	685.4	58.4	5.4	85.2
11		70x3 0-1	29.0	138.8	66.2	901.9	72.6	4.1	80.5
12		70x3 5-1	29.5	150.9	68.4	1053.0	82.5	4.0	78.3
13	Navruz	70x2 0-1	29.0	88.9	45.2	540.8	43.7	6.6	80.8
14		70x2 5-1	32.2	104.8	48.9	714.8	55.9	6.0	78.2
15		70x3 0-1	32.8	120.4	49.2	944.3	71.2	5.3	75.4
16		70x3 5-1	33.0	133.8	52.9	1100	80.9	5.0	73.5

In this variety, the number of seeds and their weight were 83.1, 108.8, 156.1, and 238.3 more, and their weight was 14.9, 9.4, 23.6, and 31.5 grams, according to the planting schemes of the control variety "Jahongir". The "Rodnik" variety was 15.3, 7.1, 26.2 and 99.8 more and weighed 6.8, 8.0, 9.2 and 17.3 grams according to the planting schemes.

The number of seeds and their weight in the variety "Navruz" was 106.7, 138.2, 198.5 and 285.3 more and the weight was heavier by 13.4, 16.4, 22.2 and 29.9 grams, according to the planting schemes of the control variety "Jahongir". "Rodnik" variety was 38.9, 36.5, 68.6 and 146.8 more and heavier by 5.3, 5.5, 7.8 and 15.7 grams according to planting schemes. The variety "Dilbar" was 23.6 units more in planting

schemes, 29.4, 42.4 and 47.0 units less in subsequent schemes and 1.5, 2.5, 1.4 and 1.6 grams lighter in weight.

The weight of 1000 seeds depends on the number of plant stems, and an inverse correlation is observed, that is, the weight is heavy when planted densely, and light when planted sparsely. The weight of the control variety "Jahongir" was 69.8 grams in the first variant with a feeding area of 1400 cm², 68.5 grams in the second variant with a feeding area of 1750 cm², 65.7 grams in the third variant with a feeding area of 2100 cm², and 62.6 grams in the fourth variant with a larger feeding area of 2450 cm². It can be seen that in the variants with an expanded feeding area, a decrease of 1.3, 4.1, and 7.2 grams was observed compared to the variant with a smaller feeding area.



The weight of 1000 seeds of the variety “Rodnik” was determined in the following sequence by feeding areas: 76.5, 74.3, 72.4, and 68.4 grams. This pattern was also observed in the varieties “Dilbar” and “Navruz” studied in the experiment. “Dilbar” grade was 87.4, 85.2, 80.5, 78.3 grams, while “Navruz” grade was 80.8, 78.2, 75.4, and 73.5 grams.

CONCLUSIONS

It was found that the weight of 1000 seeds obtained from the “Dilbar” variety, depending on the planting scheme or feeding area, was heavier than the “Jahongir” control variety, “Rodnik” and “Navruz” varieties. In this case, the weight of 1000 seeds was heavier than the “Jahongir” control variety in the following order, depending on the planting scheme or feeding area; 17.6, 16.7, 14.8 and 15.7 grams. In relation to the “Rodnik” variety, in the following order; 10.9, 10.9, 8.1 and 9.9 grams. In relation to the “Navruz” variety, in the following order; 6.6, 7.0, 5.1 and 1.8 grams.

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